

T.V.

Superheroes of Television Science Fiction

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SCI-FI

MONTHLY

**STAR TREK:
THE KIRK
STORY**

**BACK STAGE
WITH DR. WHO!**



**ENTERPRISE
BRIDGE
BLUE-PRINT**

**PLUS: THE
BLACK HOLES
OF SPACE: 199**



**GIANT STEVE AUSTIN
PIN-UP INSIDE:**



Is Mankind Alone In The Universe? Or, Like The Worlds Of STAR TREK And SPACE: 1999, Is There ...

Romulans, Klingons, Vulcans and Pycchons ... there seems to be no end to the intelligent life-forms constantly being discovered in the worlds of Star Trek and Space: 1999. Indeed, perhaps the population explosion is not just Earth's problem, but a problem affecting the entire Cosmos! But is reality is this the case? **ARNOLD KINGSTON** investigates

Calculations suggest that for every three million stars, there is one civilization like our own - or at least of our own - scattered throughout the Galaxy! Now many scientists agree that life in space is not only possible, but a certainty. However, such ideas are only relatively new. Even up to the first half of this century, the concept of alien races was scoffed at as mere speculation. Indeed, for a long time it was believed that even planetary systems (such as our Solar System) did not exist anywhere else in the Universe.

However, since 1943, evidence has come to light proving that our Solar System, rather than being a Universal exception it, in fact, a Universal rule!

In 1943, Dutch-American astronomer Peter Van der Kamp discovered a 'wobble' in one of the stars of the double-star system 61 Cygni. This wobble showed that a component too small to give off light must exist - in other words, a planetary system! In 1950 another planet was detected, this time beside the star Lalande 21185. Since then there has been a rash of 'wobble' sightings, the most exciting suggesting the presence of a three-planet system around Barnard's star (which is, in fact, very close to our sun - only 5.9 light



years away). So it now appears that throughout the Universe there are Solar Systems just like ours, complete with Stars and orbiting planets - the perfect situation for life to evolve! However, in order for Star Trek's Spock and Space 1999's Maya to evolve, other factors must occur within these planetary systems. First of all, the star itself would have to be of a certain size. The larger the star is, then

the shorter-lived its planet will be. This will mean that it will die out before the planet has had time to go through the long chemical stage prior to the evolution of complex life forms. On the other hand, a star that is too small will not be able to warm a planet sufficiently, unless the planet is extremely close, in which case it will suffer damaging tidal effects.

One estimate gives the figure of 17 billion

stars of the right size, in our Galaxy, capable of having habitable planets orbiting them! The planets themselves would have to be large enough to keep an atmosphere (If it were too small then the gassy would not be strong enough to stop the atmosphere from floating away into space - similar to what happens on the Moon.)

On the Earth, the chemical basis for all life is an amazing substance called DNA (short for Deoxyribonucleic Acid) which, though very complex in construction, is made up of just five kinds of atoms - carbon, hydrogen, nitrogen, oxygen and phosphorus. These atoms were abundant in the oceans and atmosphere of the primitive lifeless Earth. Similarly they must have been abundant in the beginning on the home planets of Spock (Planet Vulcan) and Maya (Planet Pycchon). Although Spock has a slightly different internal structure to that of Captain Kirk and other Earthlings, he is still a product of the form of life known as carbon-based.

Most biologists now believe that this form of life is exceedingly common on planets throughout the Universe, but this does not mean that a creature resembling man exists on any one of them. The almost infinite variety of living forms in our own World is sufficient proof that nature never repeats itself exactly. There must be thousands of Worlds ruled by two-eyed, two-legged creatures, but other suns and other atmospheres will produce many changes in detail.

The idea that other varieties of life chemistry, which are utterly different to our own carbon based life form is not new. More than fifty years ago a paper read at the Royal Institution in London speculated freely on the



"There is every chance that other civilizations exist in the Universe..."

possible existence of a high temperature protoplanet.

More recently, the biochemist and science fiction writer Isaac Asimov suggested some other categories of living creatures based upon different chemical reactions. At temperatures hot enough to make iron flow, a thermophilic biology might evolve. At somewhat cooler temperatures (around 150-400°C) life might be based on fluorocarbon compounds with liquid sulphur taking the place of water. There would also be at least three other possible life chemistries at temperatures far below the average on Earth. In the warmest of these, liquid ammonia would replace water; life forms in such an environment would flourish at around 50° below zero. Still farther down the thermometer scale at 120° below zero liquid methane might take over, and finally at 220° below zero liquid hydrogen might replace the water we need on Earth. These alternative life forms also point out the possibilities of other life forms existing much nearer to us than on 61 Cygni C. Perhaps even as close as Jupiter, Venus or Mars?

On these planets it is evident that different life forms would develop. But even with similar life chemistry to our own, the inhabitants would be different — adapting to their environment for survival. Take Spock's home planet of Vulcan, with the thin air, the high gravity and the extreme heat and cold. As we read in issue 1 of TV SCI-FI MONTHLY, the famous pointed ears of the people of Vulcan was necessitated in order to hear sounds made almost inaudible by the thin atmosphere of Vulcan, giving them a defense mechanism against the huge reptilian creatures who rained the planet in the age of Spock's primitive ancestors.

Apart from the Vulcans' pointed ears, their twin hearts and their green blood (caused by the traces of copper and nickel which can be found in it), the Vulcans are very similar to man. But what can we expect to find in the way of differences in the shape of other intelligent life in the Universe if we receive an answer to the Arecibo message we transmitted to the Jovians in November 1974?

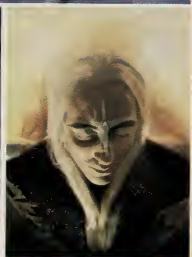
Man on Earth walks upright, which is an inherited characteristic from ancestral man who stood on his legs in order to be free to use his hands. With the increased use of his hands, his brain simultaneously grew larger in proportion to his body. His hands became capable of making more delicate movements than those of animals with claws or hooves. Certainly, animals without the ability to control complex movements with fingers or arms are handicapped compared to man.

The eyes and ears, being vital sensory organs, have always been sited close to the brain so as to shorten the path of nerve impulses. From this we can extrapolate that other intelligent creatures would have an erect posture with eyes and ears in the head for good evidence. On a planet that was dimly lit, by a small red sun for example, the eyes might be large for greater light gathering power, somewhat similar to nocturnal animals on Earth. They may even be able to "see" a lower level of radiation than we can.

Stereoscopic vision is also a prime requisite in order to take in the full 3-dimensional quality of the environment around them. Without this they would forever be incorrectly gauging the distance of objects around them.

The chances of four-legged humans, or at least extremely powerful leg-muscle humans, exist if the gravity is excessive. This is interesting because on Spock's home planet Vulcan the gravity is especially very severe, yet his body has not grown accordingly with the environment. It would be expected that he would be shorter and squatter with a very powerful body to accommodate his 'greater weight'. Also, with the thin atmosphere he lungs should be much larger in order to take in the necessary amounts of air required to keep him alive.

So it would appear that there is every chance that other civilizations exist in the Universe, and it may well be that they will look very similar to ourselves. But if they don't then we ourselves may have to develop a lot further, especially when we consider how we react to our own brothers with different colours and different racial characteristics here on Earth!



- 3 THE WANDERER: *TV Sci-Fi's resident alien answering your letters.*
 4 ENTERPRISE BRIDGE BLUEPRINT: *Another special plan pull-out, this month detailing the control deck of the Galaxy's most famous starship.*
 5 READOUT: *A brief roundup of news and facts from around the globe.*
 6 THE JAMES T. KIRK STORY: *The fourth in our series of Star Trek profiles. This time it's your Captain speaking.*
 8 STEVE AUSTIN PIN-UP: *The Six Million Dollar Man on all his glory, as seen by artist Jeff Cummings.*
 11 END OF THE UNIVERSE: *Our Science Fact Special Investigator Black Hole, the dark void which some scientists feel could destroy space - and us!*
 13 JIMI GEMINI: *TV Sci-Fi's other alien looks for the future in the events of today.*
 14 INSIDE DOCTOR WHO: *A visit to the sets of the world's longest-running TV sci-fi series.*
 Back Cover: **ALIEN OF THE MONTH** - This month's creature feature is the disgusting Zygon, from the Dr. Who episode 'Terror of the Zygons'.



WANDERER OF THE STARS

THE WANDERER

39 Goodge Street
 London W1P 1PD
 U.K.
 Planet Earth

Greetings Earthlings!

You are building a vital piece of inter-stellar documentation - the fourth issue of the Earth magazine TV SCI-FI MONTHLY. If you are an old fellow traveller, you will know what is in store. If this is your first taste of TV S-F, this is your future:

Data from the Enterprise this month includes a full-scale profile of Capt. James T. Kirk, plus a special blue-print pull-out of the Starship's famous bridge. With my old colleague Dr. Who we examine the weird world of special effects. Space 1999's Cedar, Koenig guides us through a Black Hole, and as a special bonus there is a pin-up of that super-Earthling Steve Austin.

Not bad, eh?

Thanks many times over to all you Trekkies, Moonbaser, Dr. Who and Six Million Dollar fans for the wackloads of mail you have been directing to my Earth base. My only regret is that I can't print more! The amount of information you have stored away on such shows as Star Trek is, well, astronomical!

*Tis all for now, so until next issue...

THE WANDERER...

EDITORS: Dan Ayala, Mick Funn ART DIRECTOR: Kimball Adams
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Dear Wanderer,
 You make a lot of what the science fiction buffy call mistakes. In your article on "Amok Time" you made five:

1. Vulcans go into *pon* for every seven earth years, not every 18 as you stated.
2. Plonk soup is not plonk soup but *PLONGER* soup 3,6,4. The *ax* used is the *Lupa*, not the *Lupa*. And the leather strip is the *Alva Woon*, not the *Alva Woon* as printed.
3. Spock was betrothed to T'Pol, T'Pol is the vulcan matron, a member of the high council and about 200 years old. Apart from these mistakes, I am really glad that you do such splendid articles on STAR TREK. I think your magazine is the tops. How about a picture of Lt. Uhura or Spock looked as a *kes* with Christine Chapel? Do you think you could sell me where I might obtain the Balantine books or join any fan club even remotely connected with STAR TREK in England? Thank you again and again, Yours sincerely, Katrina Fletcher

Oh, yeah, Katrine, we really did it didn't we. All we can say to you and the hundred or so others who were in pointing out the gaps in "When Vulcans Run Amok" is - sorry! The writer and researcher responsible have been banished to a remote, cold and exceedingly rusty planet, Lt. Uhura and Christine Chapel! Hm... We are currently considering a lot of STAR TREK fan clubs. Watch out for future issues. The Balantine books can be obtained from "Dark They Were and Golden-Eyed", Berwick Street, London W1.

Dear Wanderer,
 So far I have both copies of TV SCI-FI MONTHLY, and I am thrilled that there is now a magazine based on TV's science fiction. My only complaint is, STAR TREK is all we seem to see and read about so far. Not that I don't like STAR TREK, but your magazine is full of it. SPACE 1999 is also a favourite of mine, but there seems to be no mention of that. DR WHO is the most brilliant TV programme ever, it is sci-fi and yet it has hardly had

a mention! Now come on DR WHO has been running for longer than any sci-fi programme I know, and has 12,000,000 weekly viewers. So LET'S HAVE A LOT MORE DR WHO AND A LITTLE LESS STAR TREK!!

Yours,
 Marcus Justin, Morfham.

Okay Marcus, take a look at page 13, but watch it - the Trekkers will get you.

Dear Wanderer,
 I liked your first issue of TV SCI-FI MONTHLY and have now gladly got issue 2. I like your magazine because it has given me something completely new to collect, as I am read on SPACE 1999, though my most exciting series was UFO. I would like to see a lot of UFO in the magazine, and also competition. So please, please could you do so.
 Yours sincerely,
 Steven Platt

Like LOST IN SPACE, we are examining the possibility of doing a UFO feature in the near future.

Greetings to you, Wanderer!
 I, too, have travelled in time (present, past and future) in the edge of the solar system and beyond, but I can see now that I will have to return every month to 20th century Earth to buy your galactic magazine. I very rarely have a chance to discuss new chemical formulas with Mr. Spock or to play chess with Captain Kirk, nor have I chatted to Commander Koenig for a while, so I hope your magazine will keep me informed of their progress. My favourite of the interplanetary travellers are the crew of the Starship Enterprise (especially Mr. Spock), but a fellow traveller (who, incidentally, is my best friend) goes head over heels about Mr. Chekov, so a word here or there about him wouldn't be left untried. I have said, with interest and delight, the first two editions of TV SCI-FI MONTHLY and look forward to many more. May you live long and prosper.

Wanderer of the Stars

Always pleased to send a fellow galactic traveller. Don't take any wooden yippers

Dear Wanderer,
 I have been looking through Sci-Fi magazine and I think it's very good! After reading this first issue completely, I decided that I would write you a letter and tell you some future additions. The story titled "The Show They Just Couldn't Kill" was quite good (keep up the good work!), I think you should write up a story on an episode each month. Perhaps you could even have pictures about the episode every issue. I also have a suggestion on a star matter, Kirk, played by James Lomas from the ST episode "Wolf in the Fold". You could even start a section called Lost In Space. Though some have their different opinions on the show, I still think it would be a good idea.
 You're probably wondering how I, a person living in New York City, got an issue. Well, actually it was my father who gave me a copy, and I will be getting more issues. You've got a good magazine - keep up the great work!
 Sincerely,
 Lee Soel,
 New York City, N.Y.

Thanks for all the compliments. We've dropped Starline of the Month for the moment, but if you want it back - who knows? We've been investigating changing up some material on the TV show Lost In Space. Watch for developments.

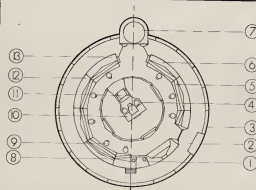
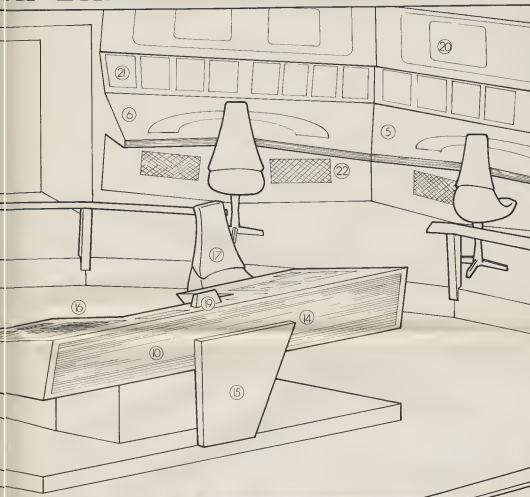
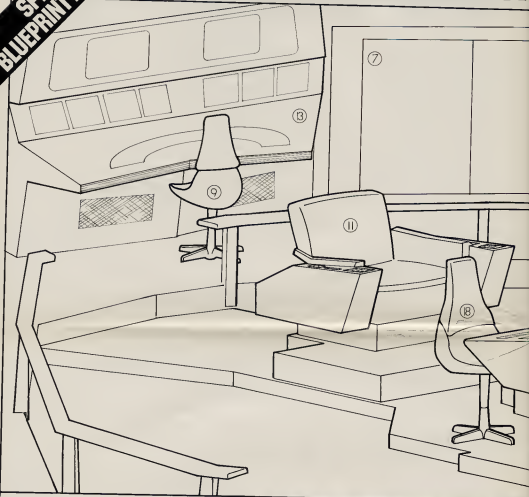
That's it for this month, if you have a letter to send to me, please address it to:

The Wanderer
 TV Sci-Fi Monthly
 39 Goodge Street
 London W1P 1PD
 UK

Also, if you're in need of a pen pal, why not send in your name and address and I'll try my best to look you all up.

**SPECIAL
BLUEPRINT PULLOUT**

USS ENTERPRISE STARSHIP BRIDGE BLUEPRINT



KEY TO ENTERPRISE BRIDGE

- 1 TOILETS
- 2 SERVICE CORRIDOR
- 3 OUTER SHELL STRUCTURE
- 4 COMMAND MODULE
- 5 ENVIRONMENTAL STATION
- 6 ENGINEERING STATION
- 7 TURBO ELEVATOR
- 8 DEFENCE & WEAPONS STATION
- 9 OPERATOR'S SEAT
- 10 HELM & NAVIGATION
- 11 COMMAND CHAIR
- 12 COMMAND INTELLIGENCE STATION
- 13 COMMUNICATIONS STATION
- 14 CONTROLS CONSOLE
- 15 SUPPORT PYLON
- 16 ASTROGATOR
- 17 NAVIGATOR
- 18 HELMSMAN
- 19 SENSORS ALERT LIGHT
- 20 VISUAL INTELLIGENCE SCREENS
- 21 COMPUTER DATA READOUT SCREENS
- 22 BRIDGE VENTILATION





SONS OF STAR TREK

GENE RODDENBERRY, creator of *Star Trek* and the indisputable father of television science fiction, is back at the *Star Trek* helm, producing the first full-length feature movie of the series in Hollywood (see TV SCI-FI No. 21). The Gene Roddenberry Interview. Here, Gene talks to TV SCI-FI, this time telling of some of his shows which didn't make it to the screen...

TV SCI-FI: Gene, besides the *Star Trek* films, you are still working with television?

GR: Yes. If we abandon TV, then the habits will run it even further into the ground. I have other projects. One of them is MAGNA I, a sort of futuristic underwear series in the year 2116.

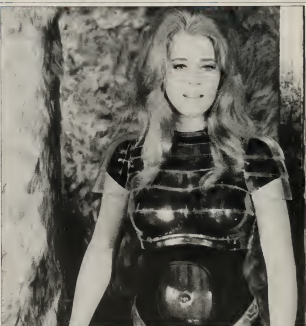
What about the other projects? One of them is dead already. It was originally called *Giveness II* and I had great hopes for it. It dealt with the exploits of a 20th century

mornings wondering what I could put over on the network bastards that day. It was part of keeping sane under the pressure and red tape. What happened to *Giveness II*? It was run as a movie for TV and the network didn't like it, so I took it to another network. They wanted another pilot. So we shot another two hour movie based on one of the episode plots and retitled the show *Planet Earth*. It was inferior to the first concept, but we were looking for a sale. Then they pulled around for a year and decided to make it their way — another two hour movie called, this time, *Strange New World*. It was horrible. I had nothing to do with it. The contract gave them the right to use the property once themselves. It was so bad that I'm sure it's dead. It's a shame, but it shows what happens when the network gets its hands on what it thinks science fiction is. They ruin everything. That's why I refused them *Quantum*, my other show.

What was that about?

Quantum, the hero is a machine — an android — an artificial computer, in fact. His thinking is much like that of Mr. Spock. I wrote that part for Leonard Nimoy, but he had prior commitments and we had to use another actor. He won't be distinguishable from people like Spock with the ears, either. We decided that it worked better with out that this time. As I saw it, anyone who approaches the human race with any degree of intelligence or logic will stick out like a sore thumb, so why bother with ears? What is the plot of *Quantum*?

He's a sort of mechanical vapour, a link in a long line of such creations made by a race from another planet



FROM THE VAULTS

This month's trip into the vaults takes us back to 1958 and one of sci-fi's early multi-million dollar extravaganzas — *Barbarella*.

Barbarella starred Jane Fonda with one of her most memorable roles as the 'Wonder Woman' type heroine who takes on a whole Galaxy of lustily evil aliens. Based on the French comic strip of the same name, *Barbarella* had Ms. Fonda falling from one lecherous snafu to another in what was almost certainly the funniest

space epic produced.

Directed by Jean YVES' sometime husband Roger Vadim, *Barbarella* boasted the most lavish sets and outrageously inventive costumes and make-up ever seen up until then. Particularly memorable were the handsome androids — complete with enormous feathered wings — and the 'Ogan of Pleasure' into which Ms. Fonda is thrust. The organ is designed to 'pleasure' its victims to death. Indeed, *Barbarella* shows, in

short:

Such early, *Barbarella*'s sumptuous burlesque has lost their edge somewhat. However, the special effects still remain as a stirring testament to ingenuity and the performances — especially Ms. Fonda's 'dumb blonde' character — are as enjoyable as ever. If the space of sci-fi pictures currently being produced in Hollywood showed up just one movie as original as *Barbarella*, we will be extremely fortunate.



VULCAN ROCK

At the end of the *Star Trek* episode 'The Naked Time' in which an alien water catalyst had produced bursts of temporary insanity amongst members of the crew of the Enterprise, First Officer Spock is heard playing his Vulcan Lyr and singing a song — James Blah blas listed the words thus:

"Alah, wu-craush, spru pu nstu
Oren t falk mair aroos
Rigi baba, paku pira
Fro-cum"

To be sung vigorously with the voice meant to imitate those un-Vulcanian or impassioned clams!

melania ago to guide the human race into a constructive way of life and protect it from itself. We had problems with *Quantum*, too. Like what?

The network people wanted to make alterations to the basic concept of the android and the plot that would have destroyed the intelligence of the show. I withdrew it rather than have it prostituted into another *Strange New World*.

What happens to it now?

I'll wait until the time is right and try again.

Anything else?

I'm toying with a thing called *Spectre* — ghost stories, but ghost stories handled as science fiction. You must keep busy. How does your wife keep up with you?

It's not hard. Most weeks outside, too. She was Nurse Chapel in the *Star Trek* series and I used her in *Quantum* and *Giveness II*. We have a son, Gene Jr., who takes most of her time now. No... before you ask me: Gene Jr. does NOT have pointed ears!

NEXT MONTH: Gene Roddenberry talks about *Star Trek*, both past and future.

astronaut put in suspended animation until the year 2133AD. He awakes to find civilization as he knew it wiped out and a whole new Earth in its place. The planet is now inhabited by many different cultures, each founded on some topical regnant or principle of society when it collapsed, such as women's lib, drugs, racism, militancy, etc. With a format like this we can go anywhere.

How does the astronaut fit in?

He joins a group known as PAX, a peace loving colony founded by scientists devoted to preserving the way of life he knew. Their rivals live in the city of Tyrannus — a hedonistic, Romanesque society run by mutants with two navel.

Why TWO navels? It's a private joke of mine. Back in the early days of *Star Trek* I was forbidden to show navels in some of the girls' costumes. We had to re-shoot an entire segment of a show once because of it... very expensive and very stupid. So... when this new show popped up I thought I would get even for all the navel I couldn't show back in the old days and have two! I used to wake up in the

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THE JAMES T. KIRK STORY

The Life and Times of a Starship Commander



He has one of the most coveted jobs in the Galaxy... and one of the most demanding. His job—commanding the USS Enterprise. His name—Captain James T. Kirk. Captain Kirk... That's Your Life.

Commanding a starship is no easy matter. It involves a degree of dedication that most transcend family ties and the security of a home. It is no exaggeration to say that a Star Fleet Commander is wedded to his ship in a way that includes all the mutual relationships that provide comfort, support and satisfaction for most average people.

In the case of James T. Kirk, Commander of the Starship Enterprise, this dedication to duty is something close to a religion. He is a sensitive, idealistic man totally committed to the Star Fleet service and to his success as Captain of the Enterprise.

The standards of performance that he sets himself allow very little room for either relaxing or shirking. For anyone in a position of command, it is essential to maintain an image that inspires trust, confidence and obedience in those under him. James Kirk seems particularly aware of this need, and his quiet maintenance of this kind of front puts him, for a great deal of the time, in the situation of having to seem almost superhuman.

There have been times when Kirk has given the impression that he would like to be a great deal more casual with his colleagues on the Enterprise, much more one of the boys, but his rank makes this impossible.

Although he may suffer from the loneliness of command, James T. Kirk has become something of a legend throughout the Federation Star Fleet, particularly since he took over the Enterprise for his skill, courage and ability to make snap, but invariably correct, decisions.

In the period of the Star Trek TV series, Kirk appears to be in his mid-thirties. He was born on Earth, in a small town in the state of Iowa. Very little has been revealed about the parents of James Kirk, but it would appear that as family did, in fact, travel across the galaxy.

Although the details of this journey have never emerged in any Star Trek episode, it is certain that at about the age of fourteen Kirk was present on Taurus IV during the rebellion against Kodos the Evil-Doer and his terrible regime. For the sake of these experiences he had slaughtered thousands of the planet's inhabitants.

All this comes out in the episode called "The Conscience of the King." Kirk is called upon by his old friend Dr. Ligon to observe an actor called Kandarian who was suspected of being, and later turned out to be, Kodos, the escaped evil overlord. At present, Kirk entered the Star Fleet



Academy at a midshipman. At the completion of his course, he graduated in the top one per cent of his class. He joined the Starship Republic as an Ensign. He moved to the U.S.S. Enterprise and was promoted to the rank of Lieutenant. He was twenty-two at this time, and was in charge of the ship's plasma banks when a marauding, gaseous life form decimated the crew of the starship by feeding on their red blood corpuscles.

The Star Trek episode "Ghastor" recounts how the Enterprise, with Kirk as command, finally tracked down the same life form some twelve years later.

Kirk's first command was on a destroyer

class starship, and then there he went to the Enterprise, replacing Commander Christopher Pike when he was killed and badly injured. Pike was eventually returned to Los Tudos IV to live a life of total illusion.

Replacing Pike must have been no easy task for James Kirk. Some of the crew, including First Officer Spock, had served under Pike for up to eight years. It must have taken Kirk a good deal of determination to overcome their reserve and their undivided loyalty.

There are times when it might seem that the life of a starship commander is a lonely and even monastic one. Despite Kirk's

single-minded devotion to his ship, there have in fact, been a number of women in his life. One of Kirk's first recorded loves was Ruth, the girl he left behind on Earth when he embarked on his career in the Star Fleet. Unwilling to wait for ever, she became bored with waiting for Kirk to return and married someone else.

Not very much has emerged about Ruth in Star Trek episodes, but from the way Kirk has made emotional references to her, when defrains, or when the balance of his sanity has been threatened, we know that he has not forgotten her.

Dr. Janice Lester is another of Kirk's old flames. She and Kirk had been companions, if not lovers, when both of them were students at the Star Fleet Academy. Janice Lester was, however, dedicated to science, while Kirk wanted to go into space. Neither would give up his or her chosen career in the other, and so once again the story of separation is repeated.

In the case of Janice Lester, absence seems to have made the heart sorer. When she makes her reappearance in the episode "Turnabout Intruder," she gets her revenge on Kirk by taking over his body and transferring his mind to her body. Needless to say, her evil plans are foiled in the end.

Kirk and Lieutenant Commander Arell Shaw were once close, but drifted apart because of what are described as philosophical differences. She turns up in "Court Martial" as the prosecuting officer in the trial of Officer James Finney.

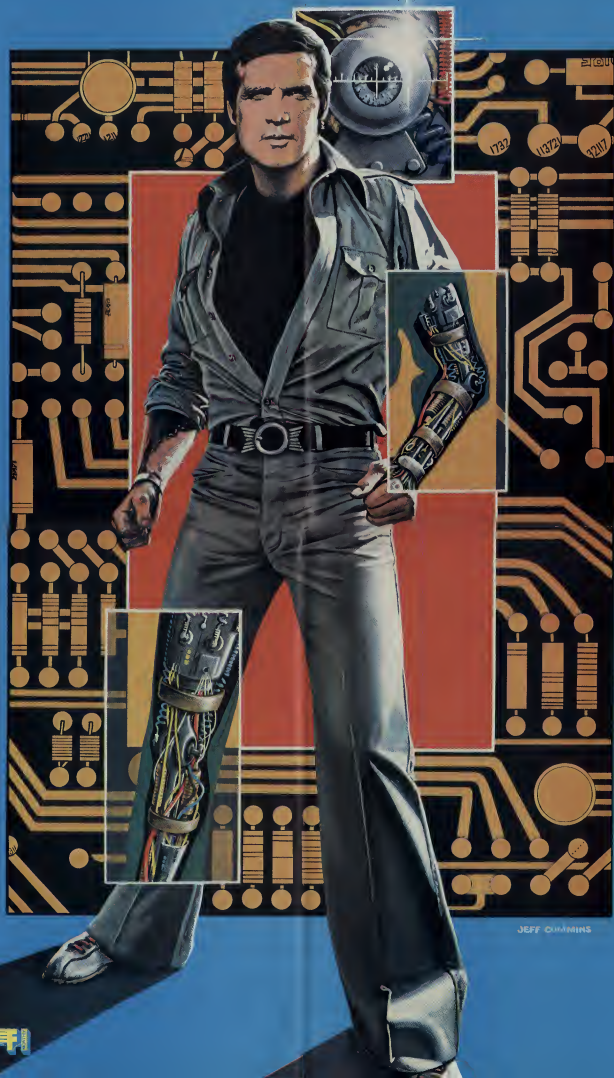
Finney, incidentally, was an old comrade of Kirk's, but after his negligence in leaving a vent open to the instant chamber open and endangering the Republic while he and Kirk were working on it, Kirk reported him to the Commander. After that, Finney became Kirk's bitter enemy. He envied Kirk's success and felt that his own career and officers' careers had been lighted by his one-time shipmate.

All this led up to the story "Court Martial." Although James Kirk may not have had a great deal of success in his personal relationships, his professional career is a totally different story. Apart from his distinguished service record, his list of decorations is impressive. He holds the Palm Leaf of Astar, the Gaudete Order of Tactics (Class of Excellence), Prestige Ribbon of Commendation, the Star Fleet Citation of Gallantry and the Karagane Order for Merit.

According to Star Fleet official records, James T. Kirk (serial number SC 933-101/76) holds the rank of Captain and his official post is Commander. — Starship. As Captain of the Starship Enterprise he has proved that he is a distinguished and successful officer. Although his total dedication to his ship and crew may have sealed some of the emotional side of his life and prevented him from forming close friendships, there is no reason why he shouldn't continue to be an outstanding officer in the Federation Star Fleet for many years to come.







JEFF CLAVIN





Black Holes—Collapsed Stars Absorbing All Galactic Matter. Will They Provide Mankind With The Key To Superspace? Or Do They Spell...

THE END OF THE UNIVERSE?

Does our future rest upon those dark and little-known patches of space we call Black Holes? TV SCI-FI's Chris Rowley devotes a Science Fact Special to investigating this possible key to the fate of mankind... and the Universe!

Space 1999 fans will recall how the words of the Tritonian Robot that renamed Moonbase Alpha shortly after the Moon had been blasted out of its earth orbit.

"YOU WILL NOT SURVIVE FOR LONG!"

"Why do you say that?"
"THE PATH YOU ARE FOLLOWING WILL LEAD YOU TO CERTAIN DESTRUCTION."

"Explains!"
The naked brain pulsed, the single eye stared unblinking, emotionless. "A DARK AREA, YOU CANNOT AVOID IT. A BLACK SUN WHICH WILL DESTROY YOU NOW."

"What?" Koenig leaned forward, glaring at the single eye...

This was how Koenig learned that Alpha faced the most terrible ordeal possible in galactic space — the Moon was doomed to be sucked into a dark star or as we now call them — a Black Hole!

Recently Astronomers and Mathematicians have discovered quite a lot about these frightening and enigmatic Black Holes. Their results pose some terrifying and intriguing possibilities.

On the one hand, it now seems likely that most large stars end their lives in a collapsed form, producing large numbers of Black Holes throughout the universe. In these dark stars the process of crushing gravitational attraction is, it seems, annihilating the matter of the Universe. On the other hand, there is the possibility that by leaping in harness their strange powers Mankind may unlock the mysterious realm of superspace and be able to make split-second leaps across the Galaxy, in

effect Black Holes could provide us with Interstellar Space Travel and even a form of Time Travel too!

To understand roughly how Black Holes are formed, we have to remember how stars are created in the first place because it is from stars that Black Holes appear. Stars condense from the clouds of dust and gas in the galaxies. All of the billions of atoms in a gas cloud exert a certain amount of gravitational attraction on their neighbors. In time this gravity pulls them together, tighter and tighter until they're packed so tightly that baby stars are formed.

All stars are hydrogen fusion engines. They transform hydrogen into helium by fusing hydrogen atoms together under the tremendous pressure that exist in the star's heart. This is the equivalent of a continuous and enormous Hydrogen Bomb going off all the time in its center. The gas falling in toward the center pulled by gravity is balanced by the energy and gas radiating away from the central regions where hydrogen fusion is taking place.

From then on the critical factor in determining the rest of any star's life history is simply how big it is. The smaller the composition of gas, and therefore the star itself, the longer its life will be. The smallest stars are the Red M Dwarf. These little red stars, usually less than half the size of our own sun, are thought to have lived up to 20,000 million years. Their surfaces are relatively cool, giving them their typical red color. There are also the slowburning candles of the star class.

At the other end of the scale are the hot and white giants and supergiants which consume swiftly, burn with an awesome ferocity and finish their brief lives in as little as fifty thousand years.

Our own star, the sun, is a happy medium on this scale with an expected life cycle of around 100,000 million years.

If at the death of the large hot stars that the strange Black Holes appear. What happens is that, as the massive star uses up a significant proportion of its hydrogen fuel, it reaches a crisis point. Smaller stars, like our sun, follow a well planned path at this point, puffing up into red giants before finally dying out into white dwarfs. For large stars, this may end as is impossible. A few particularly large and unstable stars will go Supernova, exploding in with the most stupendous of all the sights in the Universe! Suddenly the star implodes and then instantaneously converts nearly all of its remaining mass into energy! Supernovae are often brighter than the rest of the galaxy around them — at least for a few days — before they quieten and go out forever. But this dramatic birth is rare and a far more common end for large massive stars is to end as a Black Hole.

As the star uses up its fuel so it reaches a point where the energy generated in its center is no longer able to keep the crushing force of gravity at bay. Suddenly, with enormous speed, gravity wins the ancient struggle and the vast mass of the outer part of the star falls into its centre at incredible speed.

In Space 1999 the crew of Moonbase Alpha were lucky enough to have Victor Regener around. He came up with an energy source that protected the base as it fell into the Black Hole and was catapulted into another universe. It's this possibility that has added interstellar hopes to the calculations of Black Hole watchers.

Collapse tears the space around themselves so much that the normal laws of space and time are reversed. Time stands still or

you backward, inside Black Holes while distances and direction factors are way abolished! A time traveller using a Black Hole would have to pick the right sort of hole! The small Collapsars would exert too violent an effect on him, but — larger one, particularly a rotating one, could possibly be useful. By entering this zone of reversed time, a traveller, if he was able to return, would get back before he set out!

In a rotating collapse other possibilities exist, rather like those used so widely in Space 1999. They may provide us with an endless series of 'Goaways' into other different universes. The problem would be getting back to our own one because at the moment it seems that such travel would always lead on to new, different universes and never back into ones we'd already been through!

The most exciting possibilities, though, are those held out by the combination of 'super space' theory and the forces unleashed in the centre of Black Holes. Super Space envisages every point in the Universe connected in every other point by what are called 'wormholes'. In the centres of Collapsars, where matter is being squeezed out of existence, it is now thought that gateways open up along which this crushed matter passes to some other point in space.

Unfortunately before we could use such gateways we would have to overcome the problem that only matter which has been crushed to a billion, billionth of its normal size is able to move through superspace. By the time a spacecraft has been compressed enough to move into superspace and travel instantaneously somewhere else, its atoms and those of its crew would have become indistinguishable — totally crushed! Of course if we had energy sources of sufficient power, like those producing Moonbase Alpha then who knows? We may yet be able to harness the strange power of Black Holes to travel to the stars.

**"You will not survive for long... You cannot avoid it...
You are heading towards a Black Sun..."**



TOMORROW IS ALREADY HERE!

So, Earthlings, it is time once again to take into the probable lines of your future. Started at the control console of my chronosphere, I experience a certain awe at the blind indifference with which terrestrial creatures rush upon their destiny. Consider a handful of this month's items: The extraordinary implications of electrical stimulation of the brain. Compulsory sterilisation in India. First steps towards voluntary euthanasia. Perhaps there appear to you as isolated events, of no particular significance. On the contrary, they are the subtle, subterranean seeds which will one day grow into the shape of things to come. As a genetic information detective, this is my job, to see the invisible patterns of the future in the chaos of the present. And I tell you, the present is already past, tomorrow is already here!

● **ANIMAL ROBBED BY YEAR 2000.** WILL BE USED IN WARFARE, CRIME AND HOUSEWORK. Electrocution in the brains of animals could turn them into virtual robots, says Dr Boris Levinson, a New York professor of psychology. "It does not lie in the realm of science fiction." By the year 2000, he predicts, "man will use the animal as an instrument of warlike and vehicle for espionage. Multilingual groups of talking monkeys. Criminal activities such as theft, robbery and even murder will be committed by specially trained pets in the employ of robbers." Electrically controlled animals will also become household slaves. Simply by turning a dial, the housewife will be able to make her animal robot "open doors, close windows, adjust beds and even call out for help."

Electrodes in the brain give direct control. "We can already implant minute electrodes into animals' brains to make them placid, angry, or to stop them attacking," Dr Levinson explains. "It is only a matter of time before electrodes can be implanted into every part of the brain to make them do whatever we wish."

Dr Levinson's predictions are supported by news that scientists at Cardiff University have developed a new kind of implant that combats misbehaving electrodes. It leads with up to 64 "points" that monitor or control separate brain functions with a tiny printed circuit of the kind used in computers. The implant is cheap, strong and reliable. It allows scientists to monitor a broad range of brain activity while the animal goes about its life as free to move around normally.

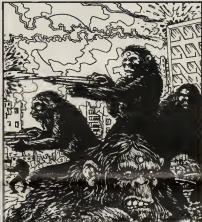
Electrical stimulation of the brain (ESB) has become one of the most important frontiers in brain research over the last 10 years. Experiments on insects, animals and humans have allowed scientists to pinpoint the precise parts of the brain that control not only physical

movements, but also emotions, moods and feelings. By simply pressing a button, the scientist can make a person move any part of his body automatically, evoke feelings of fear, anger, relaxation or intense pleasure to the point of orgasm, and induce long forgotten memories, flashes of speech, or sensations of smell, taste and sound.

Pets with electrodes in their brain have been known to continuously press a lever that stimulates their "pleasure centres" until they die of exhaustion and dehydration. In New Orleans there are people who can stimulate their own brains simply by pressing a button attached to their back. The device has been used to automatically monitor and prevent the erratic brain activity that causes fits in epileptics. It has also been used to "burn out" particular parts of the brain in people with histories of chronic depression and uncontrollable violence. An English surgeon has suggested that the same kind of operation could be beneficially applied

played on large number of violent inmates. Other doctors fear that widespread use of "pleasure centres" stimulation could produce a new class of "electrical addicts" or E.A.s.

More than most scientific developments, ESB is open to misuse by the authorities. If household pets can be turned into electric robots by means of an operation that it becoming simpler every year, so too can human beings. Implantation of electrodes in a whole population at an early age may one day be as feasible as mass inoculation. The authorities could then monitor the brain activity of the population at large, detect or dangerous patterns. The implants could also be used to control people — to make workers attentive and hard-working on the factory floor, soldiers eager and fearless in battle, to pacify demonstrators, and so on. Dr Bigsby would then have no need for external conditioning — a measure of Dr Bigsby's head would be inside every person's head!



● **American scientist** Michael Greenwood has claimed that he was given on a secret CIA-US Navy project to train dolphins to enter the water and attach electronic monitoring devices to the hulls of Russian ships. If disturbed by foggers, the dolphins were trained to kill them. The project failed because the dolphins were too unreliable.

● **EDRODOM BOARD TELLS TEACHER WHERE TO GET OFF.** SILENCE IMPROVES CLASS PERFORMANCE. An American University has fired classrooms with a device for students to tell teacher when he is becoming boring. Each desk contains a switch that can be operated without teacher's seeing. The switches activate lights on a "boredom board" at the back of the class. Teacher quickly learns to adjust a more entertaining film.

At a language school an experiment with total silence in the class room has produced dramatic improvements in kids' academic performance. Not a word is spoken in class. Teacher and kids communicate entirely by memos "posted" in pigeon holes on the classroom wall. Preliminary analysis revealed that kids learning grammar in the "Silent" class made only a third as many mistakes as kids in normal classes. And the teachers loved it. Now you know why "silence is golden".

● **WILL QUAKE DEVASTATE STOKES-ON-TRENT?** EARTH SWELLS IN CALIFORNIA SYMP. DMO! Fresh earth tremors have rattled quakes and shaken houses in Stokes-on-Trent. Last year, more

than 26 tremors shook the city. The centre of the activity is River side Road. Baffled by the phenomenon, earth scientists now plan to induce an artificial quake next month by setting off explosives underground in order to obtain further data. Explanations for the tremors range from the collapse of old mine workings to genuine geological activity. Earthquakes are not entirely unknown in Britain — there were several in East Anglia in the 19th century.

Meanwhile, a large area of California north east of Los Angeles is reported to have risen more than 26 centimetres since 1960. Scientists believe the swelling is caused by rocks expanding because of tension in the earth. It is one of several signs that suggest major movements. Predicting a major quake in California has been a favourite pastime of psychics, doomday freaks and mad seismologists.

At a village near San Francisco destroyed downtown San Francisco in 1906. Scientists are not prepared to predict the timing of the next quake, but agree that it could happen at any time.

A quake registering 8.7 on the Richter scale recently killed 30 and injured hundreds at the start of Ecuador.

● **Alien hunted and twenty-one new objects were reported as space in 1975.** The vast majority — 752 — were the result of old satellites and rocket debris. The US Navy launched only 26 payloads last year, and the USSR 109. Though the junk problem is not yet acute, NASA scientists are already working on clearing the debris.

● **PLUTO'S SURFACE IS CHANGING.** GAS JUPITER HAS MAJOR TAIL. Astronomers have established that the surface of Pluto is made of frozen methane gas. Observed only in 1930, Pluto is the most distant planet in the solar system (40 times further from the sun than earth), and appears in even the largest telescope as little more than a fuzzy point of light. Its surface temperature is estimated at an inhospitable —240°C.

NASA's space probe Pioneer 10 is expected that Jupiter has a massive magnetic tail that stretches 400 million miles into space, reaching as far as Saturn. Jupiter's magnetic field, like of Earth's, is caused by the flow of liquid metal in its interior. The field is shaped into a tail similar to a comet's tail by the constant flow of the "solar wind", the stream of particles emitted by the sun.

● **EUROPEAN ROCKET TO USE SOLAR FUEL.** The first European rocket being developed by the European Space Agency for satellite launching will depend on Russian supplies of solar fuel hydrogen. The reason is that the US has indefinitely closed the Baltimore factory that makes hydrazine because of pollution by a chemical suspected of causing cancer.

● **MASSIVE BIOLOGICAL MUTATIONS: UNKNOWN MATERIAL PRODUCED BY SIBERIAN EXPLOSION.** On June 30, 1980, an unidentified object struck earth near the Tunguska River, central Siberia. Impact produced an explosion equivalent to a massive hydrogen bomb and was followed by a scorching "red flash" that burnt out a 1,500 square mile area of forest. For days after the event, luminous clouds of the kind sometimes seen after large volcanic eruptions appeared over Russia and Europe. The clouds were so bright that it was possible to read a newspaper in Paris or London in the middle of the night.

Since 1908 the impact area has been subject to biological mutations at a rate 12 times the normal. Strange flowers and bushes have sprouted up, and what used to be an area of stunted vegetation struggling to survive in the swampy tundra has turned into a mighty and flourishing coniferous forest.

Early belief that the object was an unusually large meteorite have been discounted because no meteorite particles have been found in the area. Instead, scientists have claimed particles whose composition is not only unlike that of any known meteorite, but also unlike any man-made.

The Russians are this year sending a new expedition to investigate the mystery. One suggestion is that the object was a comet. More

fascinating is the theory that it was an alien nuclear-powered spacecraft that went out of control and crashed.

Meanwhile, one of the largest showers of meteorites ever recorded is reported from China. Over 100 meteorites fell, including one weighing more than 2 tons. Chinese scientists are investigating.

● **PLANTS MAKE ELECTRONIC CONVERSATION, REACT TO KODAK, BEETHOVEN.** A device on sale for 25 dollars in the US is claimed to convert your plant's "feelings" into a series of electronic buzzes. Attach one lead of the "psychophone" device to the roots and the other to the plant's leaves, then listen as it wants to make, television or having cigarettes smoke blown at. Don't be baffled. Do to know what gets your plant greatest pleasure.

"Plant consciousness" became fashionable after Cleve Backster, an ex-CIA interrogation expert who trained New York cops in the use of the lie-detector, attached a lie-detector to a rubber plant in January 1966. He claimed that the plant showed a reaction, on the lie-detector, when he thought about burning it or killed shrubs by dropping them in boiling water nearby. It has since been claimed that talking to your plants, or playing them soothing music, will increase their health and longevity. Serious scientists discount the whole idea.

● **WORLD POPULATION TOPS 4 BILLION: MAJOR STEPS TOWARDS VOLUNTARY EUTHANASIA.** At midnight on March 27 the population "clock" at Chicago's Museum of Science and Industry counted in the 4 billionth person on planet Earth. The clock ticks away at a rate of 2.2 persons per second, or 180,000 a day.

Within a month or two major steps, long predicted as inevitable by soft writers, will be taken towards mass world population. In India, three states announced legislation to make sterilisation of men and women compulsory after a rate of 12 million and rising at one million per month. Other measures include raising the marriage age, cash payments for voluntary sterilisation of couples with 2 children or less, and strong tax incentives.

In America, the New Jersey Supreme Court unanimously ruled that the respirator which has kept 22 year old Karen Dunbar alive for 12 months can be switched off at the request of her parents. Karen went into a coma following a drug overdose. The decision opens the legal way for other patients with no hope of recovery to be allowed to die even though they can be kept alive by medical machinery.



Will we be as shocked by the Tunguska event as we were by the Tunguska event?



Dr. Who is the world's longest running TV Sci-Fi series. Ever since 1964 it has been thrilling British viewers with its own unique worlds of the past and the future. Now its ratings have never been higher and it appears as if the time-travelling Doctor will go on forever. TV SCI-FI's Don Andrews travelled to the BBC's White City studio in London to talk to one of the Dr. Who visual effects men - Mat Irvine.

There are many reasons why the Doctor and his time-travelling Tardis have captured viewers' imaginations. For a start the Dr. Who stories have always been as thoughtful as they have been exciting, dealing intelligently with the many questions time travel throws up. Although there have now been four actors playing Dr. Who over the years - as the Doctor is an immortal Time Lord, his human appearance undergoes physical changes every so often - each actor has added a new pace to his personality, so that now the Doctor is as complex and real to Dr. Who fans as the

person next door.

But probably the greatest factor is the series' success in the incredible array of aliens and enemies which cross the screen each year, together with the spectacular special effects that appear on screen.

Mat Irvine has been working as a BBC special effects man for the past five years and has contributed to four Dr. Who series, including the one currently in production - *Cateranotes of Death*. Although the BBC employs about 45 visual effects staff, Mat says that as there are so many programmes to be produced, that time and space place restrictions on the crew - together with the usual tight television budget. As such, Dr. Who will never have the bomb effects and models of *Space 1999*. However, for ingenuity, Dr. Who is hard to beat.

Special visual effects for Dr. Who can be divided into roughly three groups, says Mat. Special props, the models and the costumes. First, the costumes. "The aliens are usually a combination of latex from the Visual Effects, Costume and Make-Up departments. Because of the tendency for actors to be human shaped, most monsters end up basically humanoid in appearance. However, over the years the most popular monsters have been those which are totally non-humanoid. Not surprisingly, the Daleks still top the list, closely followed by the Giant Spiders of Melbus."

TV SCI-FI readers will need no introduction to the Daleks (Issue No. 1), the race of evil machines bent on world domination. The Spiders - from the series "Planet of the Spiders" - were equally ingenious from an effects point of view. "Some were made as puppets," recalls Mat, "strung from very fine nylon lines. Others were purely 'dummy' for the background scenes, with a single line so they would catch Special attention was paid to the Queen Spider as she did most of the talking. Wires and cables enabled mandibles and legs to move, and a specially made stand meant she could be moved from her palanquin to the grapple with an effects man beneath to operate her."

But the star spider was not the Queen but 'Burns', a member of the council chamber of

spiders. 'Burns' claim to fame was that he was completely self contained, complete with motor and batteries, and he could be used in show white strings, wires and other animation devices were unpractical."

Harwood alerts are made by creating a clay mask of the features, then taking a plaster cast copy and moulding latex faces from it.

Special features can be built onto this in the case of Davros, the Dalek creator (see TV SCI-FI Issue 1), an electric circuit was built into the mask to control his 'eye'. Hands and feet are made in a similar fashion, and 'skirt' is made flat and then wrapped around a frame.

Special props for any science fiction programme demand high imagination and superb technical skills if they are to succeed. But with Dr. Who, props often become major headlines. Whereas *Star Trek* and *Space 1999* have a range of permanent props which appear regularly in almost every single episode - phasers, communicators etc. - only two items have survived the passage of time with the Doctor: the sonic screw-driver and the Tardis key. Everything has to be built from scratch each episode. "The headsets over which one tries to design a different looking gun or radio from that which has gone before," says Mat.

Many of the Who props are incredibly complex, containing electronic circuits to make them perform. One example was the 'Machinosepe', a device to 'activate' transmission from the stars' which was featured in the story 'The Pyramids of Mars'. It was fitted with four motors, a special 'glowing' vinyl, various lights and three sets of pyrotechnics to allow it to 'explode'. The control box needed for all this ended up looking just as complicated as the Machinosepe itself.

Mat Irvine's specialty is model making. "The building of the models is really a specialist subject in itself, but suffice it to say that the craft are made out of practically anything and everything. A rocket will be made out of an old piece of plastic champagne and an alien craft from a block of balsa. Commercial kit cars are used, but not normally as a basis for the model, usually for dressing the final design. However, detailing need not be all that great, upturned saucers

and plastic lampholders make very passable lunar buildings at a distance. 'Earthly' can be made from a simple mixture of sawdust, flour and paint-point colouring scattered loosely over a basic landscape shape."

Evening the model sequences is very different from live action. To smooth out any bumps and jerks from the models, they are reversibly filmed at high speed (anything up to 120 frames per second) and then projected at normal speed (25 f.p.s. for television). The models themselves are quite tiny. For instance, the Doctor's famous time-travelling Tardis stands just over inches tall. Most of the made is armed with batteries and electronics to make the light on top flash. For space shots, the models are 'blown' on very fine metal or nylon wires.

"Explosions are another effect that are performed in miniature and filmed fast," explains Mat. "This spreads the 'bang' over a greater period of time and brings it more into line with its full size counterpart. As even greater length of time for a model explosion can be obtained by firing not one, but several charges rapidly, one after the other, on a timed switch. This was the way the Pyramids and Maces were finally dispatched in 'The Pyramids of Mars'."

Although special effects are a major part of Dr. Who, taking anything up to two months for each series - Mat says that they alone cannot make a science fiction programme. This is the reason why he prefers to watch *Star Trek* to *Space 1999* - even though the latter's effects are undoubtedly the best in the business. "Obviously the Anderson stuff is incredible," he says, "but the trouble is you do rather tend to see the same sort of thing over and over. It's like some forms of sci-fi art - you get a bit bored by it. You can't make a series just out of special effects."

Hopefully, with the second series of *Space 1999* looming on the horizon, the show's scripts will match up to its special effects. And with Mat and the rest of the 45-man special effects team at White City perfecting their art every scene, Dr. Who should be most of a joy to watch every episode.

Daleks, Giant Spiders, And A Time Travelling Police Box Called The Tardis...





**ALIEN OF
THE MONTH**



SCI-FI